

# Feminist geographies of new spatial media

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*Critical GIS emphasized the ways in which social, political, and economic inequalities are (re)produced through spatial information technologies and attendant practices. In the mid-1990s through the early 2000s, feminist interventions challenged the presumed gender neutrality and universality of GIS and brought gender to the fore of Critical GIS concerns. However, the rise of nascent web-based spatial information technologies—or new spatial media—signals the need to extend this work to determine how it is that gender matters differently in this newly diversified, pervasive, and public context of geographic information technologies. Building on an analysis of online commentaries and an assessment of the functions and promotional material of several illustrative applications, we argue that gender continues to “matter” vis-à-vis new spatial media in three key dimensions: i) new practices of data creation and curation; ii) affordances of new technologies; and iii) new digital spatial mediations of everyday life.*

Keywords: Critical GIS, digital social inequality, gender, spatial media, volunteered geographic information (VGI)

## Les géographies féministes des nouveaux médias spatiaux

*Les instigateurs d'un examen critique des SIG ont souligné la façon dont les inégalités sociales, politiques et économiques sont (re)produites par les technologies de l'information spatiale et les pratiques consécutives. Du milieu des années 1990 jusqu'au début des années 2000, les interventions féministes ont contesté la prétendue neutralité de genre ainsi que l'universalité des SIG et ont fait ressortir l'importance des questions de genre pour la critique des SIG. Toutefois, la montée des nouvelles technologies de l'information spatiale sur le Web – ou des nouveaux médias spatiaux – laisse entrevoir la nécessité d'élargir ce chantier afin de déterminer dans quelle mesure le genre intervient différemment dans le nouveau contexte diversifié, omniprésent et public des technologies de l'information géographique. En s'appuyant sur une analyse de commentaires en ligne et une évaluation des fonctions et du matériel de promotion de plusieurs exemples d'application, nous soutenons que le genre « compte » toujours en regard des nouveaux médias spatiaux et ce, à trois niveaux: i) les nouvelles pratiques de création et de conservation des données, ii) la capacité d'accéder aux nouvelles technologies, et iii) les nouveaux arbitrages spatiaux-numériques de la vie quotidienne.*

Mots clés : critique des SIG, inégalité sociale numérique, genre, médias spatiaux, information géographique volontaire (IGV)

## Introduction

We have been contending with “new” web-based geographic information technologies for the better part of a decade. Examples include web-based

platforms for the user-generation of spatial content such as WikiMapia and OpenStreetMap (OSM); virtual globes such as Google Earth; the locational affordances of mobile devices, such as iOS Location Services, which automatically geotag photos captured with the iPhone's built-in camera; application programming interfaces (APIs) that, for instance, allow users to map their own geographical information over Google Maps base data and embed this “mashup” in their own websites; and a burgeoning

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class of geosocial applications such as Highlight and Foursquare that broker connectivity between users through built-in locational capabilities of mobile devices or users' self-reported locations. Originally coined by Crampton (2009), "new spatial media" designates both the "technological devices and [the] information artifacts" (Elwood and Leszczynski 2013, 544) that result from the intensifying convergence of digital information communication technologies (ICTs) with location (Leszczynski 2014).

Claims about the significance and effects of these new technologies, the practices emerging through them, and their pervasiveness in (some) everyday lives vary widely. Because of the relative ease-of-use of many of these technologies, some have claimed a newly levelled playing field for all, including for groups often located on the losing side of the GIS digital divide, such as women, indigenous peoples, and ethnic minorities. Ever greater numbers of people have the technical literacy and know-how needed to enrol and operate spatial media hardware/software, enabling a multiplicity of divergent and potentially competing representations to be generated by a variety of individuals and groups. For example, the collaborative mapping initiative Wiki-Mapia allows competing descriptions of places, as users can offer incongruous boundaries for urban neighbourhoods, annotated with detailed narratives *about* those places that reflect the contributors' attachments to them. New geosocial media applications such as the "smart journal" Path permit users to automatically share their spatial trajectories ("paths") with their friends. Users may enhance journal entries by adding descriptive tags to places, such as their feelings about or experiences at particular locations, and these expressions of their materially inhabited, inherently spatialized lives are shared with the people in their network. For Warf and Sui, such new practices, in particular the user-generation of locational content, engender pluralist ontologies constituted by the multiple and often-times conflicting realities "perceived and inhabited by different social groups" (2010, 198) and represented in their content.

The legacy of Critical GIS' emphasis on the (re)production of social, political, and economic inequalities through spatial technologies necessitates that we question these claims of radical openness. Spatial information technologies are never neutral and universally inclusive, but rather encode and generate social exclusions along

multiple axes of difference. In particular, Feminist GIS critiques and interventions, as well as the focus on gender in participatory GIS, challenged presumptions of gender neutrality with respect to spatial technologies. This work illustrated key mechanisms through which spatial technologies (re)enact gender and gendered relations, including access, the representation of knowledge, and the inclusion of women as stakeholders in practices of negotiation and data curation (McLafferty 2005; Kwan 2002a; Pavlovskaya 2002). Feminist GIS was appropriately focused on the gendered biases and effects of GIS as the hegemonic spatial technology of the time. However, with the rise of new spatial media, we must extend this work to determine how it is that gender may matter differently in this newly diversified, pervasive, and public context of geographic information technologies.

In this article, we examine the ways in which gender continues to matter vis-à-vis new spatial media, building on the contributions of Feminist GIS challenges to the universality of spatial information technologies and artefacts. We examine the ways in which the thrust of the substance and critiques of Feminist GIS interventions remain relevant, and investigate ways in which emergent spatial information technologies (re)produce gender(ed) identities, norms, subjectivities, exclusions, and spaces in new, unprecedented ways. In elucidating how it is that gender matters in our theoretical, empirical, and practical engagements of new spatial media, we focus on the materiality of these technologies as well as the social contexts and relations in which they are deployed (Wilson 2011). As we demonstrate below, gender matters because the introduction and pervasiveness of emergent spatial information technologies, and the things we do with them, have material consequences that are deeply gendered. Gender furthermore matters because it is a significant axis along which difference is (re)produced through the design of new spatial media themselves, the ways in which they encode space, and the ways in which they presuppose and reify normative gendered and sexual subjectivities. These considerations are directly influenced by the Feminist-Critical GIS insistence that a consideration of and attention to gender is inimical to the very "critical-ness" of geographic engagements of spatial information technologies.

For example, acknowledging that barriers to contributing spatial data are lower with respect to many new spatial media does not in and of itself say

anything about whether groups are actually contributing volunteered geographic information (VGI) online, nor does it speak to the potentially differentiated (raced, classed, gendered) nature of those contributions. Emphasis on the technical architectures that enable participation is important, but alone ignores the ways in which participation is socially as much as technically produced (Craig et al. 2002; Elwood 2006; Sieber 2006). Similarly, pronouncements about pluralist ontologies and ease-of-use leave unexamined the ways in which social relations and identity-based power differences play out in the design, deployment, and enrolment of these technologies in everyday lives.

Bringing concerns about gender from critical studies of information communication technologies (ICTs) and Feminist GIS to bear upon emergent web-based geographic information technologies and information artefacts, we outline an agenda for gender and spatial media research. We identify central arenas in which gender matters or is produced through spatial media in ways that differ from GIS-era concerns. We offer a heuristic frame for examining the production of gendered relations and differences through spatial media developed on the basis of a review analysis of early scholarship on the topic; online content from application producers, users, and technology commentators; and an assessment of the functions, promotional materials, and commentary of several illustrative applications. On the basis of this inductive, empirical analysis, we argue that gender matters vis-à-vis new spatial media in three key dimensions: i) new practices of data creation and curation; ii) affordances of new technologies; and iii) new digital spatial mediations of everyday life.

## Feminism, GIS, and geography

Critical GIS emerged in the 1990s as an umbrella for critiques of GIS and critically nuanced re-deployments of the technology in response to these critiques. Its flourishing had strong roots in feminist theory and method, particularly critiques of science and representation (Kwan 2002b; McLafferty 2005). In the first instance, the challenge Critical GIS posed to unproblematic pronouncements as to the neutrality of GIS drew directly on the feminist insistence that science and technology are never neutral by virtue of being both (gender) value- and theory-

laden (Keller 1985; Harding 1986; Longino 1990; Nelson 1990). Second, critiques of the power relations and inherent epistemological limitations of GIS artefacts and practices of discretization drew strongly upon feminist critiques of vision and the god-trick (Haraway 1991; Rose 1993). These critiques pointed to the way in which technologies ranging from high-resolution spectrometry to GIS and remote sensing optics engender a "view from nowhere" that is totalizing in its scopic regime—complete, correct, uncontestable—and passed off as objective knowledge about the social and spatial world (Pickles 1991, 1995; Smith 1992; Aitken and Michel 1995; Dixon and Jones 1998).

Following this initial wave of critique and theorization, some scholars and practitioners brought gender to the forefront of Critical GIS debates. This body of work, identified at the time as "Feminist GIS,"<sup>1</sup> argued that gender mattered in three significant respects: i) the representation of women and of gendered forms of knowledge within GIS; ii) the inclusion of women as participants in practices of spatial data creation/curation and in the negotiation of the (gendered, never neutral) truth claims bound up in those datasets; and iii) the possibilities for repurposing GIS as a feminist methodology. Early feminist critiques centered on questions of representation. In particular, scholars argued that GIS and other remote sensing technologies were the technospatial materialization of a Harawaian gods-eye, pointing to the disembodied separation between the viewing subject (the GIS practitioner) and the object of vision (space) (Roberts and Schein 1995; Rocheleau 1995; Rocheleau et al. 1995). Bondi and Domosh (1992) charged that GIS assumed a masculinist subject of vision who omnisciently sees from nowhere to the detriment of other vantage points and ways of knowing.

Schuurman (2002) however pointed out that Haraway's critique of the gods-eye is not a condemnation of visualization technologies nor an entreaty to abandon them but rather an appeal to women to

<sup>1</sup>Feminist GIS flourished alongside other alternative GIS practices, including queer, indigenous, public participation, and qualitative interventions, which similarly sought to bring other diverse groups in addition to women into GIS processes as stakeholders and practitioners, and to repurpose GIS as a method and medium for representing and enacting different kinds of knowledges and epistemologies (Brown and Knopp 2008; Cope and Elwood 2009; Craig et al. 2002).

engage with “the cyborg” and become active participants in the design and practice of technoscience. This concern with increasing women’s participation in GIS spurred movements to boost the presence and numbers of women actively involved in practices of GIS data curation and the negotiation of truth claims bound up in those datasets, as McLafferty (2002) worked with women using GIS as part of their activism around breast cancer and environmental factors. As well, these concerns gave rise to a host of methodological interventions aimed at including and representing gendered knowledge in GIS-based ways of knowing, as in Kwan’s (2002a) and Pavlovskaya’s (2002) qualitative, experiential, and 3-D geo-visualization strategies. These studies exemplify ways that scholars re-imagined GIS as a method for feminist geography, inflecting GIS praxis with feminist epistemologies that engaged GIS-based spatial knowledge as situated, socially produced, and in many cases, gendered. In so doing, they effectively repurposed the technology in ways that belied the (presumed) masculinist bases of GIS, demonstrating it to be an ontologically flexible medium capable of representing multiple, situated attachments to place/space (see Kwan 2002a, 2002b).

By design, new spatial media platforms share with feminist GIS an emphasis on polyvocality. They are designed to support diverse forms of visual representation, including those underwritten by feminist epistemologies. For example, the Harrassmap (<http://harrassmap.org>) Ushahidi<sup>2</sup> implementation allows users to report instances of sexual harassment and assault aimed at or experienced by women in Egypt. The result is a powerful representation, and indeed real-time form of witnessing, of the deeply gendered and sexualized nature of space(s). Harrassmap captures one aspect of how the embodiment of gender materially changes the very nature of space through gender-based harassment. For men, this urban space is more likely to be a frictionless plane for movement, whereas for women, cities are experienced as spaces of negotiation (Valentine 1989; Koskela and Pain 2000; Pain 2001; Koskela 2005). Their journeys across a city involve a constant reckoning with the “safety of spatiality”

(Koskela 2005), for instance, by choosing routes or paths that try to minimize harassment by strategically avoiding certain places/spaces. Beyond being simply a representation or recording of these facts, the real-time nature of the information crowd-sourced (and verified) through Harrassmap communicates to women areas that may be hotspots of harassment or assault. Whereas a traditional static map of a city might simply represent urban space as a container for the unimpeded movement of an undifferentiated population—an inherently male-oriented view of space (Massey 1994)—HarassMap offers an alternative representation, one that includes women as participants in its construction and offers a continuously evolving snapshot of gendered urban life.

This example demonstrates some of the ways in which the rise of new spatial media creates opportunities for increased participation of women and for the enactment of multiple epistemologies. While the opening up of the mapping enterprise ushered in by new spatial media seemingly addresses feminist GIS concerns about the participation of women and the representation of women’s situated knowledges, concerns about presumptions of gender neutrality with respect to spatial technologies remain highly relevant to the ways in which we engage, theorize, and practice new spatial media. Here, we extend Feminist GIS scholarship by theorizing the ways in which spatial technologies produce and reproduce gendered differences in knowledge, data, access, and power relations in the new socio-spatio-technological context of emergent spatial media. We argue that in spite of claims of universality, open participation, and ontological and epistemological inclusiveness and flexibility, gendered differences and inequalities continue to be (re)produced and (re)enacted through new spatial media. However, the diversification of mediums, the opening up of the mapping enterprise to non-experts, and the ways in which these technologies have come to assume substantial presences in the spaces and practices of the everyday mean that emergent spatial media entail and are generative of new arenas in which gender matters vis-à-vis spatial information technologies. We identify three such dimensions or areas in which spatial media are implicated in the reproduction of gender-specific exclusions, biases, and inequalities, and in which the proliferation of these technologies in everyday life manifests in gender specific ways.

<sup>2</sup> [www.ushahidi.com](http://www.ushahidi.com); an open-source online information compilation and mapping platform for the crowdsourcing of and visualization of crisis information.

First, we show how social relations of data creation and curation are themselves gendered. Specifically, peer data creation and curation forums are comprised not of generic, hypothetical individuals but of persons whose lives, experiences, and knowledges are shaped by their identities—of which gender is a significant part. Thus gendered knowledge shapes the decisions that are made in purportedly open and inclusive deliberative forums, with implications for the kinds of data that emerge from them. Second, the affordances of spatial applications and services target certain groups over others. In other words, they are always built with particular users specifically in mind or tacitly assumed. As such, the design and function of these applications tend to encode certain kinds of assumptions, including gender and sexual identity, and they enable or foreclose certain kinds of actions based on these presumptions. And, third, the unprecedented pervasiveness of new spatial media in the spaces of the everyday means that geographic information technologies increasingly shape or mediate daily life practices. This technical mediation of everyday life is an important avenue of the gendered effects of new spatial media that increasingly structure life chances and opportunities. In the sections that follow, we take up in turn each of these arenas in which gender matters vis-à-vis new spatial media.

### Gender and new practices of data creation and curation

One of the significant developments that constitutes the newness of new spatial media is its practices for data creation and curation: crowdsourcing and, more specifically, peer editing and curation. The curation of geographical information via new spatial media is divested—albeit to varying degrees—from state-based regimes of authoritarian data production (Goodchild 2009). “Citizen scientists” now actively crowdsource spatial fabrics. Yet the new spatial media technologies and initiatives that enable greater participation across social groups do not in and of themselves beget greater participation by women or any other social group, nor do they eliminate the ways in which gender and other axes of social difference shape the processes and outcomes of these data creation, contribution, and curation efforts.

For example, the process for creating and approving “amenities” in OpenStreetMap (OSM) is a purportedly open deliberation.<sup>3</sup> Amenities are categories or tags for the identification and description of places added to OSM. The introduction of new amenities is a consensus-based process similar to the vetting of articles in Wikipedia. New features are proposed by contributors, opened for discussion, and put to a vote before OSM editors to approve or reject them as OSM categories for describing spatial phenomena. Though OSM is open to all, men contribute geographic information to OSM at roughly twice the rate of women (Stephens and Rondinone 2012). Men are also over-represented among the moderators of major online mapping platforms such as OSM and Google Map Maker (a platform for the user generation of edits and new features to the Google Maps base data) (see statistics from Waze Mobile 2012; Stephens 2013). Such male-dominated editorship and moderation means that masculinist worldviews are likely to dominate deliberations over the vetting of features and edits. These male-centric data legitimization practices are evident in the kinds of feature types that are part of the OSM amenity schema. Whereas “male” spaces are rendered visible within data sets produced through the purportedly “open” consensus-based approach to approving changes and adding new amenities, spaces traditionally associated with women are obscured or excluded.

A case in point is the proposed refinement of amenities available to identify sites of childcare. Stephens (2012, 2013) describes the effort to get a *childcare* amenity added to existing OSM amenities *kindergarten* and *baby\_hatch*. These latter two categories designate childcare services for very young school-aged children and infants from birth to one year, respectively. The *childcare* amenity was proposed to account for spaces providing care for pre-school aged and older children. It was voted down by an all-male contingent of OSM editors on the basis that this proposed new amenity would not provide any additional descriptive utility to the OSM spatial feature schema over and above *kindergarten* and *baby\_hatch*. Stephens (2012, 2013) compares this with the tremendous detail in OSM amenities

<sup>3</sup> Open Street Map is a crowdsourced spatial database that contains roads, paths, political boundaries, physical features, and facilities such as businesses, parks, landmarks, etc.

that are available to distinguish sites for the consumption of sex and alcohol. The OSM key for amenities includes three differentiations for public establishments where one can engage in sexual acts or view sexualized behaviours—*stripclub*, *swingerclub*, and *brothel*—a fine-resolution taxonomy in which subtle differences have been deemed sufficient to define distinct amenities. In stark contrast, *childcare* was deemed insufficiently distinct by the OSM editorship, despite the applicant for the amenity's inclusion clarifying that *baby.hatch* and *kindergarten* designate childcare available for the 0–1 and 4–5 age groups, thereby failing to include places that provide care for older children.

Spaces of care, particularly those of childcare, are highly feminized and tend to occupy or occur in the private sphere, which in the tradition of Western philosophical dualisms is associated with women (Massey 1994; England 1996). The voting down of the *childcare* amenity re-relegates spaces of care—and women—to the private sphere by rendering them invisible and leaving them, literally, off the map. In contrast, masculinist spaces, in this case, public establishments for sexual voyeurism and activity, are made visible. Of course amenities such as *stripclub*, *swingerclub*, and *brothel* do not target men exclusively; a *swingerclub* could be catering to heterosexual couples, and the designator *stripclub* says nothing about the gender of performers, nor of the gender or sexual orientation of the clientele being targeted by any individual establishment. However, longstanding gender norms around the expression of sexuality accord men roles as sexual actors and presume women to be passive and submissive recipients of that activity. Gendered dichotomies around public/private spaces situate the public sphere as the domain of men. Thus, it is reasonable to assume that these kinds of amenities disproportionately reflect male spaces. The approval of this detailed feature categorization scheme for sexual service establishments and the parallel veto of the addition of a *childcare* amenity are expressions of masculinist social and spatial knowledge.

The naming of spaces is a highly gendered practice, reifying masculinist spatial privilege (Stae-heli and Lawson 1995). Stephens (2012, 2013) usefully illustrates how this manifests in decisions around which amenities to include or exclude from the OSM feature schema, thus generating gendered differences in the kinds of spaces that are legitimat-

ed through inclusion into the data. To this we would add that what is further significant is not only the inherently gendered production of space, but that the gender imbalance in editorship and the resulting gendered partialities in the data sets are *obscured* by the surrounding discourse of “open participation” and democratic practice around consensus-based validation and verification (see also Haklay 2013). These gender biases cascade through the feature schema into the spatial fabric of OSM itself. As a dataset, the OSM base map is implicitly authoritative—it sets out a particular world that is “true.” Once this legitimacy is established in or via this data set, its gender-specific exclusions are less likely to be noticed as users go on to use these data for maps, analysis, or mashup with other data. Gender matters vis-à-vis new practices of data curation around emergent spatial media because the highly gendered knowledge gatekeeping effect at the level of the data scheme sets the ontology of what can be true or even what can exist. This gatekeeping effect is, however, obfuscated by the touted openness of crowdsourcing initiatives. Some data users will inevitably conclude that because “everyone” had the opportunity to contribute data and participate in deliberation around the data scheme, “everyone” must have done so.

Peer collaborative data authoring practices are not the only way in which gender relations and representations of space are produced. Spatial media technics also encode gender and gendered privilege, doing so through technology design, the affordances<sup>4</sup> of individual spatial media applications and services, and the ways in which these presume and appeal to normative gender subjectivities.

### Spatial media technics, affordances, and gender

Technology products are imbued with the situated, gendered positionalities of engineers, designers,

<sup>4</sup>“Affordances” refer to the perceived functional capabilities of technologies. Rather than being understood as the design features of components of technics, affordances are instead what those features or components can be used for. An example is the navigational compass rose in Google Earth—because it is modeled after a conventional navigational instrument, it is intuitively understood by users that pushing down on the North arrow will result in movement of the terrain in the northerly direction, for example.

programmers, and software developers who produce those technologies (Wajcman 1991). Masculinist values can be encoded into technologies in explicit ways, particularly in instances where male privilege drives the very design and conceptualization of the end product. Two examples of geosocial media<sup>5</sup> are particularly illustrative in this regard: the mobile applications *WhereTheLadies.at*<sup>6</sup> and *Girls Around Me*.<sup>7</sup> *WhereTheLadies.at* (WTLA) is an iPhone application that mines Foursquare<sup>8</sup> for check-ins from users with female-sounding first names as an indication of the number of women present at any one place. Available in a limited number of U.S. cities, *WhereTheLadies.at* aggregates these check-ins to calculate the density of women at various locations. It then notifies users of hotspots that have the highest number of female users self-reporting their presence at a given location at any one time (Reininga 2010; Stop the Search 2011; Tsotsis 2012). *Girls Around Me* (GAM), released in 2012, was similarly premised on scraping Foursquare check-ins to identify those generated by women, but went further than WTLA by linking those check-ins with the women's Facebook profiles. This gave GAM users access to a trove of personal information about them, including their stated interests and tastes (in music, movies, etc.), as well their relationship status, their friends/contacts, and their birthdate (Brownlee 2012). This linkage between services, a function of the networked nature of platforms, was possible for any female users who had a public unsecured Foursquare and Facebook account and had logged in to the check-in service with Facebook credentials.

Both WTLA and GAM are directly aimed at men, specifically heterosexual men, as primary users. The targeting of male users may be discerned in their naming, the language the application developers use to describe and market their products, and in the visuals in their marketing materials and the graphi-

cal elements of their user interfaces. The very branding of both of these applications—*Where The Ladies At* and *Girls Around Me*—effectively communicates their utility, which is to assist users in identifying locations where women are present at any given time. The utility of locating women in (near) real time is, hypothetically, to assist users (men) in finding prospective women for purposes of dating/romantic connection. The services do so by designating locations women have checked in to and highlighting locations with the most female check-ins over a map mashup. While these applications could foreseeably equally be targeting lesbians as much as straight men, they assume and leverage heteronormativity in a number of implicit and explicit ways.

WTLA was founded by two male application developers, Danny Trinh and Jeff Hodson, both of whom are already affiliated with established, successful social media applications and services (Path and Digg, respectively; CrunchBase 2013). The tagline of WTLA is “[d]on’t live vicariously, find where the ladies at” (Trinh and Hodson n.d.), and Trinh declared that “[t]he few chicks that check-in are a decent sample of where more might be” (CrunchBase 2013, n.p.). A profile of the service by a technology review website argued the effectiveness of the application by stating that using “female check-ins as signifiers of an even larger ‘lady’ ratio... [the developers] have totally made an app giving nerds some kind of advantage in natural selection” (CrunchBase 2013, n.p.). This language invokes the imaginary of the stereotype of the nerd, who is prefigured as an overwhelmingly male, heterosexual, introverted, and technologically savvy subject (Kendall 1999, 2000, 2011). Partly as a result of this characteristic introversion, nerds find establishing romantic relationships with women difficult and seek ways to assert their participation in hegemonic heteronormativity (Kendall 2011). The promotional video for WTLA, posted to YouTube by one of the developers, directly appeals to the (male) nerd stereotype by providing an application that provides a familiar technological solution to their dating problems and insecurities (Trinh 2010). As the nerdy, bespectacled male in the short video clip reports from what appears to be a nightlife venue, “I’m not exactly sure how I got here tonight. I went to a site called *WhereTheLadies-dot-at*, and I... got here because I’m looking for the ladies.” The branding, marketing, and promotion of this application all mobilize

<sup>5</sup> “Geosocial media” are location-based social networking applications and services that exploit users’ locations as a premise or basis for connectivity and interaction.

<sup>6</sup> See <http://wheretheladies.at> and <https://itunes.apple.com/us/app/where-the-ladies-at/id415602400?mt=8>.

<sup>7</sup> <http://girlsaround.me>.

<sup>8</sup> Foursquare is a geosocial application that allows users to virtually “check-in” to, or declare their presence at, numerous locations. The service then shares that location with friends and contacts so as to notify others of where a user is such that they may meet up with them in person.



**Figure 1**

Girls Around Me promotional material (1)

Source: <http://girlsaround.me> (n.d.). Last accessed 1 April 2014.

heteronormative masculinities—and the promise of “ladies”—to target straight, nerdy men as potential users. Men are further targeted through the sexualized language used to appeal to them as users. The tagline of WTLA—“*[d]on’t live vicariously, find where the ladies at*” (Trinh and Hodson n.d.)—is a call-to-action deeply rooted in masculinist, heteronormative sexual scripts that expect men to be sexually dominant, and to express this dominance by pursuing (in this case) women (for a review, see Seal and Ehrhardt 2003).

The targeting of male users in the GAM applications is most immediately evident in the graphic elements that comprise the application and its promotional content, as well as the heteronormative language found in its marketing materials. The GAM application icon is the silhouette of a curvaceous woman encased in a Google Maps-like placemark (Figures 1 and 2), which Chatterjee (2012) likens to “strippers ready to give you a lap dance” (n.p.). This is accompanied by the inclusion of assorted profile pictures of young women striking provocative poses intended as a representation of the kinds of “girls” that can be found using GAM (Figure 2). Certainly

this kind of imagery could also be targeting lesbians, however the language used to promote GAM in its marketing materials reveals that heteronormativity is strongly in play. The GAM website beckoned users to adopt the app to “[s]end a sultry message via Facebook or turn up at a venue armed with flowers and a winning smile to sweep that special girl off her feet!” (GAM promotional material, in Chatterjee 2012). The application was further billing itself as the “perfect complement to any pick-up strategy” (GAM promotional material, in Chatterjee 2012). And, as per Figure 1, GAM informed prospective adopters that it would “put [them] in control” of securing prospects for a “one-night stand” (girls-around.me).

WTLA and GAM are not simply benevolent dating applications but rather services that promote and enable potentially predatory behaviour and encourage unsolicited advances to women, perhaps reaching the level of sexual harassment. Almost immediately after its release, GAM was labeled as predatory on the basis that it encouraged and facilitated stalking (Bossip Staff 2012; Brownlee 2012; Paul 2012). Foursquare quickly revoked





**Figure 2**

Girls Around Me promotional material (2)

Source: <http://girlsaround.me> (n.d.). Last accessed 1 April 2014.

GAM's API permissions, precluding it from accessing either real-time check-ins or Foursquare's venues database. The app was subsequently voluntarily pulled from the iTunes app store (Austin and Dowell 2012; Bossip Staff 2012; Paul 2012).

The masculinist nature of these applications is further underscored by two significant points. First, there are no comparable geosocial applications that directly target women as dominant or sole users in similar ways. This is not to suggest that there are no geosocial applications designed with women as primary users in mind, but rather that the ways in which these target female users differs significantly from the ways in which applications such as WTLA and GAM target male users. Take, for example, the Brazilian application *Rastreador de Namorados*,<sup>9</sup> which in English translates to "Boyfriend Tracker." This application, pulled from the Google Play store in August 2013 for reasons related to invasion of privacy, consisted of a piece of malicious code that women could surreptitiously install on their part-

ner's mobile device that would then, unbeknownst to the men, display their real-time locations via the application interface on the woman's device (Barchfield 2013; Bielski 2013). Rather than exploiting geolocation data as a means of presenting other users (men) as objects of sexual conquest and addressing its target users (women) as a (sexually) proactive demographic as do WTLA and GAM, this application actually addresses women as *re*-active actors and men as sexually voracious. The presumption driving the design of this application is that men are sexually unfaithful, and that as a result women are jealous and possessive and need technology to keep track of the whereabouts of their male partners. Even though the Boyfriend Tracker application is geared at female users, it does not re-write gender roles or norms simply by targeting women; on the contrary, it actually (re)produces normative stereotypes about gender dynamics in heterosexual relationships.

Second, the way in which extant geosocial applications encode masculinity and male spatial privilege is furthered by the example of Grindr, a mobile application that allows gay and bisexual men to find

<sup>9</sup><http://rastreadordenamorado.com.br>

other men based on their real-time GPS (smart-phone) position. Grindr does not mobilize and reify heteronormativity as do WTLA and GAM, but the production of gender inequalities via geosocial apps is apparent when Grindr's design features and affordances are contrasted with those of WTLA and GAM. Specifically, there is a significant gender difference in terms of how these applications grant their respectively male and female subjects control of their digital selves, and structure access to digital others. To be "discoverable"—i.e., visible to other men via the application—users of Grindr must opt in to the service. Conversely, WTLA and GAM do not have any comparable built-in affordances for women to opt in or out of having their data mined and repurposed through these services. Rather, women's consent is assumed on the basis of their data practices through other social networking applications. In other words, WTLA and GAM operate(d) on the assumption that women's public Foursquare check-ins or unsecured Facebook profiles give implicit permission to repurpose their information. Rather than engineering any mechanism by which women could opt in or out of having their locations disclosed through third-party interfaces, these applications function(ed) on the premise of assumed consent expressed through the *absence* of specific social data practices such as the securing of social media profiles.

The problem with this is twofold. First, the vast majority of women whose information is mined and made accessible through these interfaces are likely not aware that their self-reported locations and personal information are being repurposed by a third party. They do not know this repurposed data is being disclosed in ways that represent them as sexually available by pinpointing their locations as hotspots where men might troll for women. Second, the ability of these women to control access to their digital selves is complicated by the networked nature of social media platforms.<sup>10</sup> As we see in the case of WTLA and GAM, this can result in the

unwitting disclosure of information via third party data mining and re-use. The ability to "push" updates, notifications, and content across these platforms presents further difficulties for users in controlling and limiting access to their online selves. A user may set her Foursquare privacy settings to allow only known contacts to view her check-ins. However, if this user pushes Foursquare check-ins as automatic updates to another service, such as an unsecured Twitter profile, these check-in data become viewable to the public.

There are clear gendered differences in terms of how the specific applications discussed here structure control of digital selves and grant access to digital others. The engineering of opt in/opt out affordances into dating applications targeting gay and bisexual male users such as Grindr may represent a recognition on the part of app developers of the heightened spatial vulnerability of bi and gay men as compared to straight men. However, in contrast, the ways in which services such as GAM and WTLA repurpose female-specific locational information actively *increase* the existing spatial vulnerability of women by putting them at risk of predatory behaviours that the applications themselves facilitate. By spatial vulnerability, we mean the susceptibility of certain groups (e.g., women) over others (e.g., men) to experiencing or becoming the victims of physical violence in space (see Valentine 1989). Mining an individual's real-time locational information, correlating that with her personal profile information, and serving that data through a third party application heightens the risk of her being stalked, propositioned, or even assaulted. This is but part of what *The Guardian* newspaper (2013) recently identified as a sweeping cultural shift marked by the normalization of violence against girls and women that is associated with the pervasiveness of digital technologies and our inability to appropriately govern them and their effects. These shifts take on heightened significance in shaping gender and gender relations because of their increasing mediation of the practices and spaces of everyday life, which we take up in the next section.

## New spatial mediations of everyday life

Helen Nissenbaum (2010; 2011) has recently suggested that the critical polemic of digital ICTs is not

<sup>10</sup>By the networked nature of social platforms, we refer in this instance to the ways in which the authentication procedures of many of these applications allow users to log in to one service (e.g., Foursquare) using their credentials from another service (e.g., Facebook). This interoperability grants one application (the application being logged into—Foursquare) access to a user's profile from the other application (the credential-specific application—Facebook).

that these technologies themselves directly lessen our control over the personal information that we generate through our uses of these media. For her, this individualized perspective overlooks a centrally important reconfiguration of various societal norms through ICTs, in particular privacy. The significant problem is “the inappropriateness of the flow of information due to the mediation of technology” (Nissenbaum, in Madrigal 2012, n.p.). Following this line with regards to how gender matters in our engagements with spatial media, it is not so much a question of agency or even whether the design elements of specific instances of geosocial media enable users to control their personal information (although this is of course important in ways and for reasons that we have described above), but rather a question of who gets to define, determine, and control the context of information flow. There is a gendered politics around who enjoys the privilege of exercising control over the “fire hose” of personal information generated through our interactions with new spatial media. Yet, we need to further consider in more theoretical and empirical detail the ways in which “mediation by [new spatial media] leads to disruptions in the capture, analysis, and dissemination of information as we act, interact, and transact online” (Nissenbaum 2011, 38). Mediation is imminently gendered—in terms of the technologically-mediated “disruptions” themselves, as well as the things we do online (or do not do).

The pervasiveness of new spatial media in the intimate spaces of our everyday lives and our uptake of these technologies in seemingly mundane yet deeply personal daily practices come with new kinds of disruptions. These include pressures to conform to certain kinds of behaviours, such as giving up locational privacy, that are mandated by these technologies and their functional design elements. Building on the feminist commitment to the everyday—the “routine, taken-for-granted activity of everyday life in homes, neighbourhoods and communities” (Rose 1993; Dyck 2005, 234)—we demonstrate how the effects of these new spatial mediations of everyday life matter by exploring some of the ways in which their effects manifest in gender-specific ways.

The level at which emergent, web-based spatial media have interpenetrated “the everyday” is unprecedented compared to previous genres of geographic information technologies such as GIS. As a function of the broad convergence of location with

digital content as well as our use of location-based services and applications that we access through mobile devices carried on our persons (Wilson 2012; Kelly 2013; Leszczynski 2012, 2014), new spatial technologies mediate the practices and spaces of our daily lives and life encounters in deeply gendered ways that make the surveillant potentials and actualities of these technologies significant beyond the reproduction of normative gender roles, for example. By mediation, we mean the way in which spatial media technologies increasingly both broker *and* disrupt our everyday experiences of self and surroundings—with each other, with space, as well as our being-with-others in and across space and place.

The rise of new spatial media and their assimilation within all spheres of both public and private activity generate pronounced shifts in the nature of technology–society–space relationships. For example, spatial media are actively underwriting a sweeping erosion of locational privacy, which may be defined as the reasonable expectation that our activities in space are not being monitored, recorded, or repurposed in ways that compromise our safety, security, or confidentiality (Blumberg and Eckersley 2009; Elwood and Leszczynski 2011). Applications such as GAM and WTLA clearly reconfigure this reasonable expectation. Gender matters insofar as the consequences of this societal reconfiguration of locational privacy are far more immediate for women than they are for men. This is reflected in the differential ability to fully direct the flow of one’s personal information along lines of gender. These specific applications grant one group (men) access to another group’s (women’s) data despite the fact that this flow of content exacerbates the spatial vulnerability of women.

As discussed previously, the consequences of foregoing of control over the disclosure of one’s location for one’s physical safety is more immediate for women than it is for (straight) men. This is because the erosion of locational privacy compromises the kind of safety-in-spatiality that is latent in the ability of women to move through space unmonitored, or where that monitoring is not immediately tied to their identity (e.g., CCTV surveillance in major urban areas). Applications that are premised on the full disclosure of a person’s highly personal information *and* their real-time location open up unprecedented possibilities for individuals to track other persons at a level and with a precision beyond

the capabilities of conventional state surveillance apparatuses. Even where the engineering of privacy controls is not gender directive (i.e., not configured around a particular alignment of gender relations), when these controls fail, the consequences of such privacy breaches are nevertheless gendered because the erosion of locational privacy has more immediate consequences for women than for men.<sup>11</sup>

As more of the social mediums through which we are increasingly compelled to carry out various aspects of our daily lives have some kind of locational capability (Constine 2012; Leszczynski 2012; Wilson 2012), there is heightened pressure to rely on these applications and services and enrol them in seemingly mundane everyday practices. We are encouraged to do so by marketing rhetoric and other discourse asserting that the benefits of adoption (will) outweigh the consequences of ceding control over our personal data. This is particularly characteristic of a new class of geosocial media called “ambient social networking” applications. Ambient social networking describes a suite of geosocial applications and services—such as Highlight, Glancee (acquired by Facebook), Kismet, Banjo, and Circle—that foster “serendipitous” in-person connections between users based on their co-presence at the same venue or location. Unlike check-in applications such as Foursquare that require users to intentionally declare or report their location, ambient social networking services continuously harness a user’s mobile locational signal and “ambiently” (re)broadcast it in real time. This information is used to notify other users in the vicinity with similar interests or common contacts in their social media profile data. What is striking about these applications is that they are premised on a relinquishing of any semblance or expectation of privacy. Specifically, the potential of “social discovery” (serendipitously running into someone via the application) requires users to open up their social media profiles such that they can access them to determine which users have the same interests and/or common contacts. These applications furthermore rely on harnessing a user’s mobile GPS signal to determine in real time which users are proximate to each other, effectively removing users’ ability to

choose how and when to disclose their locations as well as *who* is privy to that information.

Writing for TechCrunch, a popular technology industry blog, Butcher (2012) noted that tech firm recruiters at the 2012 South by Southwest (SXSW) Interactive technology festival were using ambient social discovery apps such as Highlight and Glancee. Recruiters identified prospective employees with desirable skillsets based on their publicly viewable unsecured social media profiles. Elsewhere, Anderson (2012) touted Highlight as the best way for a technology professional to meet a venture capitalist. The implication in these and other widely circulating commentaries is that enterprising individuals seeking a technology career should disregard privacy concerns, open their social media profiles, and publicly broadcast their real-time location to maximize their employment prospects. This is, however, part of a highly gendered catch-22 vis-à-vis developing norms around social/spatial media. On the one hand women are encouraged to open up their profiles and publicly broadcast their locations if they want to maximize their career prospects. Yet, when they *do* leave their profiles unsecured or disclose their locations through check-in applications and services or ambient social networking applications, they are also subject to the kinds of problematic third party data re-use we see with apps such as GAM or WTLA. For example, in the backlash against these apps, namely GAM, women were essentially reprimanded for not being sufficiently vigilant about their privacy. Some commentators berated the female users who were effectively “served up” through the GAM interface for their ignorance of the way in which *not* setting their profiles to private exacerbated their spatial vulnerability (see Jurgenson 2012 for discussion). Here, women are effectively “privacy-shamed” for *not* proactively controlling their data. Yet elsewhere, they—as with all users more generally—are actively encouraged to *forgo* locational privacy. Increasingly, the ceding of control over access to one’s personal data, including profile information and real-time location, is becoming a functional prerequisite of emergent spatial media.

What is polemical is not just the trivialization of locational and data privacy for everyone, but the fact that pressure to adopt ambient geosocial media disregards the ways in which the effects of giving up locational privacy manifest in gender specific ways. The real-time disclosures of one’s real-time location

<sup>11</sup>For instance, a serious security flaw in the geosocial dating application Tinder left users’ various physical locations and other payload data exposed (Klein Orbach 2013; Seward 2013a, 2013b).

have potentially different consequences along lines of gender and sexual identity because men, women, and sexual minorities experience different levels and forms of spatial vulnerability. Our increasing adoption of these technologies in our everyday practices, from meeting new people to seeking employment, are gendered in practice and outcome. Gender matters in the ways we are increasingly incentivized to engage with location-based services and in the erosion of privacy bound up in the repackaging of personal locational information. It matters not just that women and men have different degrees of spatial vulnerability, but that the everyday mediation of our lives through these technologies structures our opportunities in life. In “wired” (and wiring) societies, our life chances are increasingly contingent upon our ability to access digital networks and the ways we gain access to those networks (Halford and Savage 2010). Access is constituted by factors that encourage or discourage individuals from participating online via certain kinds of mediums, including the gendered dimensions of online privacy and the consequences of actually participating. Spatial media (re)produce and enact new forms of digital social inequality along the axis of gender—in the examples given above, by way of the consequences associated with disclosing one’s location so as to maximize life opportunities, such as those around employment.

### **Towards a feminist critical geography of spatial media**

Drawing on the Feminist GIS attention to gender as an axis of difference central to practices with and around spatial information technologies and their societal effects, we maintain that gender continues to matter to our engagements with spatial media. By “mattering,” we mean the ways in which gender is substantive—materially (re)produced within and through the design, adoption, and deployment of these technologies—as well as the ways in which gendered social relations structure material practices with spatial media. Yet we also use “mattering” to designate the ways in which gender is important to a critical geographic theorization of spatial media. Considering gender is essential to how we think the possibilities for, and actually enact, practical and political interventions in the world through our practices with emergent web-based geographic

information technologies and information artefacts. These new genres of spatial information technologies diverge from GIS both genealogically and in terms of constituent technics, and as such raise new concerns around gender that were not provoked by GIS-based assemblages and practices. Specifically, we have identified three dimensions in which gender matters for a critical geography (new) spatial media: i) new practices of data creation and curation; ii) affordances of new technologies, and iii) new techno-spatial mediation of everyday life.

New generative platforms for curating VGI enable the representation of competing perceptions, experiences of, and attachments to place/space of multiple identity groups, including those of women. Moreover, the ease-of-use of many new spatial media, which require only basic web literacy to generate one’s own content suggests, superficially at least, that the technical barriers to participation by historically marginalized groups have been significantly lowered. As evidenced by Stephens’ (2012, 2013) work on OpenStreetMap amenities, however, the production of geographic knowledge, and consequently the representation of space, remains masculinist, as do, we argue, the very ontologies of space that are made possible. The deeply gendered practices of data vetting and legitimation that arise due to the overrepresentation of men amongst moderators and editors of spatial crowdsourcing platforms, and the gendered knowledge advanced in these data sets is obscured by discourses of the open, participatory, and democratic nature of these initiatives.

Furthermore, the affordances of certain instances of new spatial media structure access to digital selves and grant access to digital others in ways that are highly gendered. Geosocial applications such as Girls Around Me and Where the Ladies At, and contrasting applications designed for gay and bisexual men, engineer consent quite differently. Further, the material consequences of third party repurposing of personal data, including location information, are different for women than men because of the ways in which the repurposing of information produces new forms of disclosure in the context of already different levels of spatial vulnerability. The greater immediacy of these new forms of disclosure for women is partly enabled by the networked nature of platforms, but it is also a function of the unprecedented pervasiveness of spatial and other media in our everyday lives.

Unlike GIS, which was reserved for specialist activities (such as mapping, or conducting spatial analysis), the vernacular and mobile nature of spatial media means that they are deeply embedded in the spaces and practices of the everyday. Their omnipresence accordingly produces a much greater range of concerns about gender, space, and social life as compared to GIS. This is especially so with respect to the questions that stem from the ways in which emergent spatial information technologies mediate our being with each other, with space, and with each other *in* space. The foregoing of control over one's locational information is increasingly encoded as a functional requirement of spatial applications. Furthermore, we are pressured to use these services in our everyday lives in order to maximize personal opportunities—such as employment. This raises questions about the gender-specific trade-offs associated with accessing digital networks that are increasingly location-oriented in their design, and the ways in which these gender differentiated transactional costs of using spatial media may shape individual life prospects. Influenced and inspired by the Feminist GIS legacy of challenging the neutrality of geographic information technologies and artefacts, a critical geography of new spatial media must be cognizant of the ways in which the technics, content, and practices that constitute and are enacted through these technologies may reinforce existing (unequal) gender relations and produce new forms of gendered socio-spatio-technical relationships. And perhaps most importantly, a critical geography of new spatial media must also create new kinds of interventions that rewrite some of the gendered inequalities we have charted here, and deploy new spatial media in the service of newly inclusive and emancipatory practices such as those that underwrite the Harrassmap Ushahidi implementation discussed in earlier sections of the paper.

Certainly, more Harrassmaps are needed. Yet, we are encouraged by progress in other arenas that involve the design, engagement, and enrolment of spatial media in a myriad of practices. In 2012, there were no women vying for seats on the OpenStreetMapUS board; by comparison, in 2013, four women ran, being appointed to two of five positions on the board (Danielson 2013; OpenStreetMap.org 2013). Elsewhere, the membership of The Standby Task Force (SBTF)—the organization that provides technical support for crowdsourcing geographic information and coordinates digital volun-

teers to map areas in the immediate aftermath of natural and environmental disasters so as to aid emergency response efforts—has strong female representation. Both its Core Team and Advisory Board are comprised of 50% women, and many of its Team Coordinators are female (The Standby Task Force 2013). Indeed, as per Meier (2013), not only were “the vast majority of volunteers engaged in the Ushahidi-Haiti Crisis Map project (January 2010) ... women [, but t]he Ushahidi-Chile Crisis Map (March 2010) was entirely spearheaded by women” (n.p.). These examples, albeit a select few, demonstrate the ways in which emergent geographic technologies and information artefacts do not necessarily nor inherently engender pernicious Apollonian orderings<sup>12</sup> of gendered social relations and of heteronormativity. Rather, the possibilities for reconfiguring gender and gendered subjectivities are latent in the inherent ambivalence of not only spatial media, but of all technologies (Coutard and Guy 2007). It is this ambivalence, immanent to all technologies, which creates possibilities for their re-appropriation for different ends.

To say that technologies are characterized by ambivalence is not to say that they are neutral. Indeed, the threats to privacy we have described in this paper are very real and affect the material everyday lives of real, embodied individuals. Rather, to invoke the ambivalence of technologies is to emphasize the deeply contingent nature of spatial media, and thereby of their societal effects. Accordingly, whereas “in *some* instances network and [gender] inequalities grow in a mutually-supporting process, in *other* instances this is not the case” (Coutard and Guy 2007, 718). In framing technologies as socially contingent, constructed, and always contested, this opens the door to (re)constructing them. And it is precisely from this standpoint that we argue that gender matters vis-à-vis spatial media. The design, development, and subsequent enrolment of these technologies in the practices and spaces of everyday life do not occur in a social vacuum but rather are intimately bound up in the broader (re)production and (re)enactment of gendered social relations in a start-up obsessed technology milieu that presupposes male subjectivities and celebrates “brogrammers” (Marwick 2013). The coining of the term brogrammer is not only

<sup>12</sup>Kingsbury and Jones 2009.

exclusionary in its envisioning of what a programmer (or other technology professional) looks like and the kinds of activities that they are supposed to engage in (such as excessive social drinking, watching sports, and, of course, coding), but it furthermore normalizes a masculinist technology culture in which the design and marketing of products such as GAM and WTLA does not even strike the programmers as unacceptable, polemical, or sexist. This of course not only pertains to instances of geosocial applications such as the ones we have profiled here, but also the myriad of other applications and services that are presented on a regular basis, including, but not limited to, examples such as "Titstare," a "joke" application presented by two programmers at TechCrunch Disrupt 2013, the premise of which was that it allowed other (male) users to take pictures of themselves "staring at tits" (Ohlheiser 2013, n.p.).

Yet, we are hopeful. Gendered social relations are themselves always in flux, and by virtue of this uncertainty, they create ontological, epistemological, and material possibilities for gendered norms and subjectivities to be challenged and (re)written via our practices with, through, and around emergent geographic technologies.

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